

What is claimed is:

1. A high-voltage power supply that includes at least
a high-voltage transformer and a driving circuit for
5 driving the high-voltage transformer and supplies power to
a load connected to a secondary side of the high-voltage
transformer, further comprising:

a high-voltage switching circuit for switching
polarity of a DC output voltage generated on the secondary
10 side of the high-voltage transformer; and

a control circuit for controlling switching by the
high-voltage switching circuit based on a load current that
is caused to flow by application of the DC current output
voltage.

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2. A high-voltage power supply according to claim 1,
wherein a plurality of pairs of the high-voltage switching
circuit and the control circuit are connected in parallel
on the secondary side of the high-voltage transformer.

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3. A high-voltage power supply according to claim 1
or 2, wherein the DC output voltage generated on the
secondary side of the high-voltage transformer is converted
into an AC output voltage having a rectangular waveform by
25 performing PWM control for the high-voltage switching

circuit by the control circuit.

4. A high-voltage power supply according to any one
of claims 1 to 3, wherein the high-voltage switching
5 circuit has a full-bridge structure using a wide band gap
semiconductor device as a switching device.

5. A high-voltage power supply according to claim 4,
wherein the wide band gap semiconductor device comprises
10 SiC as a base material.

6. A high-voltage power supply according to any one
of claims 1 to 5, wherein the load is an image forming
apparatus and wherein the high-voltage power supply is used
15 in at least one of a charge process for charging a
photoconductor of the image forming apparatus, a transfer
process for moving a toner image formed on a surface of the
photoconductor to recording paper, and a separation process
for electrically neutralizing the recording paper sticking
20 to the photoconductor.